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ANTECEDENTS OF SMOKING ONSET IN CHILDREN AND ADOLESCENTS: A REVIEW (3rd ed)

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Abstract

This report reviews and summarizes research on the social and psychological predictors of smoking initiation during early adolescence. Large scale multivariate analyses have consistently identified three main factors which influence smoking onset: parents' and older siblings' smoking, peer influences, and a deviance-prone personality in the individual. A recent line of inquiry views substance use (including tobacco) in the context of coping mechanisms which are used to deal with stressful life circumstances.

Advertising is an ingredient of the overall social context in which smoking occurs, and has often been identified as a primary cause of smoking initiation. The empirical evidence concerning advertising's potential influence is sparse, and in any case does not implicate it as a significant contributor to smoking onset. It is concluded that smoking has a complex etiology in which advertising's role is relatively negligible.

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antecedents of smoking. Other reviews have been provided by Evans, Henderson, Hill and Raines (1979), Gritz and Brunswick (1980), and Reeder (1977). This examination of the literature focuses on, but is not confined to, relatively recent studies. Special importance is afforded studies utilizing longitudinal, multivariate designs on large samples. The subheadings represent various categories of factors which have been frequently investigated and/or shown to correlate with smoking behavior. Media effects have not been widely studied, nor is there much evidence of their influence in the initiation of smoking, however because of the current controversy concerning the potential impact of advertising, media effects are treated as a separate category of antecedent influences.

The factors most often studied as correlates of smoking onset will be reviewed in the following three categories: (1) social factors, including parental smoking and attitudes, peer influences, and changing sex role orientation; (2) individual characteristics, including control orientation, educational achievement, rebelliousness, self image, and multiple drug use; and (3) media effects.

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disentangle the cause-effect questions which result from cross sectional designs.

The dispositions and social factors posited by Wohlford and Giamonna (1969) are better understood today due mainly to improvements in conceptual clarity, and to an increase in the number of longitudinal studies. The latter represent an important advantage over cross-sectional investigations which compare smokers with nonsmokers because the cross sectional approach confounds the causes of smoking onset with its effects. Once a teenager begins to smoke, smoking status may affect perceptions and attitudes about smoking, not to mention retrospective accounts of how the habit was acquired. Another methodological improvement involves a refinement of the notion of "risk". Kozlowski and Harford (1976) pointed out that even when psychosocial influences are optimal for encouraging smoking, a substantial number of youths fail to become smokers. Do they simply resist social pressures, or do they try one cigarette and dislike it so much that they avoid smoking in the future? In the latter instance, non-use may be determined, in part, by biological factors, thus it is important to distinguish between "never users" and "triers" (i.e., those who have smoked at least once). This distinction has been recognized in most of the recent research.

The following review describes current knowledge about some of the psychological and social

developmental framework within which issues of anticipation, experimentation, and regular smoking could be investigated. They proposed a four-stage developmental history for the individual smoker, comprised of: preparation, initiation, becoming a smoker, and maintenance of smoking. Among the important benefits of this approach are the recognition of a preparatory stage wherein a number of factors may predispose some youths to try smoking, and the notion that different stages may be influenced by different sorts of psychological and/or environmental antecedents. Flay, d'Avernas, Best, Kersell, and Ryan (1983) outlined a similar approach.

Nearly 90% of all youngsters try at least one cigarette at one time or another. Some continue to experiment, while others do not. Salber, Freeman, and Abelin (1968) suggested that about 80% of those trying four or more cigarettes subsequently became regular smokers, although these data are now almost 20 years out of date. Even amongst those who do experiment for awhile, not all become regular smokers. Our current understanding of the smoking process is consistent with Wohlford and Giamonna's (1969) conclusions that smoking initiation "... appears to be neither a simple, abrupt all-or-nothing occurrence, nor a gradual smoothly accelerating process .... Whether or not an adolescent smokes probably involves a complex matrix of his personal dispositions and social factors..." (p. 551). The authors recommended longitudinal studies to help

relationship between parental smoking and subjects' intentions to smoke. Amongst high school nonsmokers, those with parents who smoked were less likely to intend to smoke. Parental smoking was, however, related to students' actual smoking status, with no evidence for cross-sex or same-sex modeling. Similarly, older siblings' smoking was more strongly predictive of actual smoking than it was of intentions to smoke. Presson et al. (1984) found that peer and family smoking were better predictors of smoking intentions for girls than for boys. Also, parental and sibling smoking were related to children's smoking intentions for their midwest sample of subjects, but not for their southwest sample. The authors proposed that the more deviant the behavior is, the more salient and influential a family model may be. Since smoking is more generally acceptable in the southwest, there is a wider variety of smoking models available, and thus the effect of family models is weakened.

Predicting smoking intentions is of little utility unless these intentions, in turn, predict actual smoking. Chassin et al. (1984) found that behavioral intentions were good predictors of future smoking in their midwest sample, although predictions were stronger for the transition from experimenter to regular smoker, than they were for the transition from nonsmoker to 'trier'. In other words, once someone smokes, even sporadically, their intentions to continue to smoke in the future are more accurate predictors than are the stated

SOCIAL FACTORS

Parental smoking patterns and attitudes

Parental and peer smoking have consistently been found to be highly associated with youthful smoking. Indeed, they are implicated as important contributors to drug use in general (Gorsuch & Butler, 1976; Kandel, 1980). According to Flay et al. (1983) these factors "vie for the primary predictive position". In their study of male Harvard alumni, McArthur, Waldron, and Dickinson (1958) identified the social milieu -- the subculture and the family -- as important determinants of whether and when men are oriented to the habit. Horn, Courts, Taylor, and Solomon (1959) found a high correspondence between high school students' smoking and that of their parents' and older siblings'. When both parents smoked, 40% of the students smoked; if neither parent smoked, only 23% of the students smoked. Salber and her associates have also shown that the likelihood of smoking increases as a function of parental smoking (Salber & McMahon, 1961), and of older siblings' smoking (Salber, McMahon, & Harrison, 1963). Clausen (1968) reports a parental effect for girls only, but his study was based on a relatively small sample (n = 123). Palmer (1970) questioned over 3 thousand high school students about their smoking habits. Only six per cent of smoking boys had

parents to be present at initial smoking experiences, although Bewley et al. (1974) found that 11% of their sample of British primary school boys had been given their first cigarette by their parents! Baugh et al. (1982) reported that among children who were given their first cigarette before the age of 12, 25% smoked them with a family member.

While it is clear that both parents and siblings play an influential part in the development of both predispositions to smoke, and actual smoking, it may be that their respective roles in the onset process are quite different. Siblings are much more likely than parents to be physically present at initial smoking situations. They may also provide the cigarette, plus a greater degree of explicit endorsement of smoking than would parents. Parents, on the other hand, have been salient models for a much longer time period than have siblings. In this sense, parental influences could be construed as distal -- preparing young people to experiment -- whereas siblings exert a more proximal influence -- perhaps providing the occasion, the encouragement, and sometimes the actual cigarette. Biglan and Lichenstein (1984) speculated that sibling influence may be transitory, in the sense that while siblings may be successful in prompting young people to smoke in the first place, smoking is less likely to continue without a supportive cohort of peers.

Wake (1979) has provided an account of parental modeling as it applies to smoking which is exemplary in

described research which showed that teens' expectations of parental anger at their smoking acted as a deterrent to adolescents' increasing their smoking rate. Vellar (1979), reporting Norwegian data, stated that parental prohibition of smoking was not affected by the parents' smoking status. Thus, in Norway parents can apparently get away with a "do as I say, not as I do" approach, at least with respect to smoking. In contrast, the North American data show clearly that parental smoking habits correlate highly with children's smoking, in spite of consistently unfavorable attitudes towards teens' smoking on the part of their parents. There may be pronounced differences in child rearing practices and/or the social acceptability of smoking which account for this dramatic cultural disparity.

Several investigators have looked at siblings' smoking status as a predictor of smoking amongst younger siblings. Sometimes older siblings have been subsumed under a 'family models' factor (Presson et al., 1984); at other times siblings' influence has been independently studied (McCaul, Glasgow, O'Neill, Freeborn, and Rump, 1982). As with parental smoking, siblings' smoking has been inconsistently linked to adolescent intentions to smoke (Chassin et al., 1981; Presson et al., 1984), but strongly associated with actual smoking (Banks et al., 1978; 1981; Bewley et al., 1974; Chassin, Presson, & Sherman, 1984; Hirschman et al., 1984; McCaul et al., 1982; McAlister et al., 1984). Palmer's (1970) data suggested that

smoking friends than did nonsmokers.

Chassin et al. (1986) provided an eloquent description of the important differences between cross-sectional and longitudinal procedures. The former may confound the prevalence of a behavior (all those engaging in it at a given point in time) with the incidence of it (all those initiating it for the first time). In the case of smoking, children who begin early may be more "deviance prone" than those who do not, or who begin later. The earlier smokers are more likely to have friends who smoke and who encourage smoking. As time passes, these differences become even more pronounced. When early-transition adolescents are included in cross-sectional studies, they are disproportionately represented in the higher grades -- thus yielding a higher correlation between number of smoking peers and smoking status as age increases (Krosnick & Judd, 1982). In their longitudinal analyses, Chassin et al. (1986) dropped long term smokers from their sample with successive increases in grade level. This is especially appropriate when the intent of the research is to identify variables which affect transitions to higher levels of smoking. In doing so, the authors showed that both peer and parental influences predict smoking transitions during both early and middle adolescence, and furthermore that the magnitude of these influences remained constant from grades 6 through 11.

While peer pressure is obviously an important factor contributing to smoking onset, more information is needed about how peer influence interacts with other sorts of variables. Gorsuch and

general use of chemical substances as a means of coping.

Peer Influences

Many studies, some of which were cited in the previous section on parental influences, show a strong relationship between peers' and friends' smoking and the smoking rates of teenagers. Cartwright and Thomson (1960) questioned over 3 thousand Edinburgh secondary school-children, and found that one third of the smokers obtained at least some of their cigarettes from their friends. Palmer (1970) found that same-sex peers were by far the most frequent source of encouragement for both male and female experimental smokers. Levitt and Edwards (1970) assigned "paramount importance" to the peer group as a predictor of smoking, relative to parental smoking models. In a huge sample of schoolchildren from grades 5 through 12, peer influence was the most frequently stated "reason for smoking" amongst the social influences mentioned in Levitt's (1971) study. Rudolph and Borland (1976) found that over 80% of the high school smokers (of both sexes) in their Pennsylvania sample, had best friends who were also smokers.

According to Mettlin (1976), most smokers have a network of 'significant others', who define the importance of smoking and also act as models of the behavior. Gottlieb (1982)

older sisters who smoke may be particularly potent models for their younger sisters. Similarly, Jacobs, Jerome, Sayers, Spielberger, and Weinberg (1988) found that older sister's smoking was strongly associated with smoking in their sample of eight and tenth grade students.

Chassin, Presson, Sherman, Corty, and Olshavsky (1984) found that smoking among older siblings was an extremely strong predictor of transition from nonsmoker to smoker for grade seven and eight children, especially girls. In Brown et al.'s (1986) Canadian sample, the highest smoking rates were amongst children who had siblings of both sexes who smoked. For this group, the smoking rate was about twice as high as the overall rate. Respondents were more likely to be smokers when siblings of the same sex smoked, with the effect more pronounced for girls than boys. Mittelmark et al. (1987) found that siblings' influence on others' experimentation was strongest on females and younger children. Spielberger (1986) has also reported that older sisters have a greater impact on their younger sisters than on the smoking behavior of younger brothers; older brothers influenced younger siblings of both sexes to the same degree. Needle et al. (1986) reported that older siblings were an important influence on general drug-using behavior, independent of peer and parental modeling effects.

Biglan and Lichenstein (1984) and Friedman et al. (1985) have shown that siblings are much more likely than

friends smoked were more likely to have tried a cigarette, to have progressed to more cigarettes, and to be smoking currently. Bloom and Greenwald (1984) found cigarette smoking to be a peer-oriented, rather than family-oriented behavior. In their sample of grades five, six, and seven students, of the total regular and experimental smokers who currently smoked, 71% usually smoked with their friends, 18% with their families, and 11% by themselves.

While the strength of the relationship between peers' and adolescents' smoking is not in dispute, the interpretation of the correlation, in the context of smoking onset, is not self-evident. It can be assumed that parents' smoking precedes that of their children, however it is not inconceivable that teenage smokers seek out and befriend other smokers after they have become smokers. If so, a correlation would obtain between smoking status and number of smoking friends, without the latter necessarily being influential in the onset of smoking. Several recent studies, using longitudinal approaches have allowed investigators to clarify the importance of peer influences relative to other factors which may predict smoking. The available data plainly show that peers have substantial influence in the onset process (Biglan, Severson, Bavry, & McConnell, 1983; Charlton & Blair, 1989; Morgan & Grube, 1991; Pederson, 1986; Santi, Best, Brown, & Cargo, 1991; Swadi & Zeitlin, 1988). Biglan and Lichenstein (1984) concluded that "... it is clear that

stronger in highschool than in middleschool.

Chassin, Presson, and Sherman (1984), elaborating on the nature of peer influences, proposed that peer and parent attitudes were related to initial onset, but not to the subsequent establishment of regular smoking. Those who increased their smoking had more initial peer and parent smoking models. Also, motivation to comply with peers increased subsequent to smoking increases. Thus compliance with peers may be a consequence rather than an antecedent of smoking onset. It is worth noting that self-reports concerning the attitudes of influential others are subject to exaggeration, since such assessments may simply reflect the projection onto others of one's own attitudes. One of the major benefits of longitudinal designs, compared to cross-sectional and/or retrospective studies (i.e., Levitt, 1971; Levitt and Edwards, 1970), is that they permit the identification of variables which may function as both antecedents and consequences of changes in smoking status.

Chassin, Presson, and Sherman (1984) illustrated this fact with the example of smoking peers. Peer influence clearly acts as a precursor to smoking onset. Their data also showed, however, that the number of smoking friends increased between Time 1 and Time 2; thus peer modeling preceded smoking onset, but once adolescents begin to smoke, they may seek more smoking peers. Gordon's (1986) data are consistent with this notion. 'Triers' in her sample were less likely to be in a predominantly smoking peer group than were regular smokers, although triers did have more

reported that only the smoking of female friends was related to the frequency and amount which the college women in her sample smoked, although her data do not bear on the issue of peer influences at the time of smoking onset. In a study of 11- and 14-year old smokers and nonsmokers, Krosnick and Judd (1982) concluded that peer influences on smoking increased during adolescence whereas parental influences remained constant. McCaul et al. (1982) found that the number of smoking friends and the percent of older siblings who smoked were "consistent and powerful" predictors of future smoking. McAlister et al. (1984), despite the cross-sectional nature of their study, assigned a "dominant causal role" to friends' smoking, as determinants of onset and maintenance in adolescents' smoking.

Pederson, Baskerville, and Lefcoe (1983) studying grade six children, found that peer smoking and peer attitude towards smoking had the strongest relationship to smoking onset. Chassin et al. (1981) reported that the number of friends who smoked was significantly related to smoking intentions for nonsmokers, experimenters, and regular smokers. Similarly, Presson et al. (1984) found that having a best friend or a boyfriend/girlfriend who smoked was associated with stronger intentions to smoke in both their southwest and midwest samples. Hirschman et al. (1984), reporting cross-sectional data, found that those whose best friend and/or majority of

Butler (1976) have poir. due to interactions between variables, it is risky to assum. cause an individual has characteristics similar to the mea. acteristics of a group of drug users, he or she will be a likely user c. drug. They illustrate this point by describing some findings of Bowers (1968) who showed a strong interaction between personal attitude toward alcohol and peer-established atmosphere concerning drinking. Personal opposition to alcohol generally precluded its use, regardless of peer norms, however a pro-drinking attitude predicted drinking only in the context of an atmosphere favorable to alcohol.

Another potentially important interaction involves psychosocial maturity and peer influences. Most youths in their midteens are particularly sensitive to peer group norms. According to Kandel (1980), "at no other time in the life span does a person interact so intensively and almost exclusively with same-age peers" (p. 276). Realization of the relativity of group norms, and a greater independence of thought develop with age and experience. Increased psychosocial maturity would render individuals less susceptible to peer influences. Both Chassin (1984) and Pederson and Lefcoe (1986) have noted that the nature of peer influence may change over the course of adolescence.

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Changing Sex Roles

On the basis of a survey of over 4 thousand University of Wisconsin freshmen, conducted in the mid 'sixties, Borgatta and Evans (1968) reported what seemed to them to be a radical change in the relative proportions of male and female smokers, compared to previous years. A slightly higher proportion of females than males arriving at college actually reported themselves to be smokers. The authors considered the possibility that this finding was perhaps temporary, and unique to their sample. They also speculated that the apparent increase in the numbers of smoking females heralded a trend toward increasingly larger proportions of smoking women, and identified the increase in female involvement in the labour market as a possible contributing factor.

Recent surveys and reviews make it clear that previously noted differences in smoking incidence between boys and girls (e.g., Grant and Weitman, 1968; Salber, 1961) have disappeared (Evans et al., 1979; Gritz & Brunswick, 1980; Kozlowski, 1979; Reeder, 1977; U. S. Public Health Service, 1976). Johnston, Bachman, and O'Malley (1982) conducted a survey of high school seniors, and report that the overall probability of having ever smoked (lifetime prevalence) in 1981 was about 5% higher in females compared to males.

Evans et al. (1979) present some possible

nonsmoking fathers. When neither parent smoked, smoking was rare for both males and females.

With few exceptions (Hirschman, Leventhal, & Glynn, 1984; Kahn & Edwards, 1970; McAlister, Krosnick, & Milburn, 1984), subsequent studies have confirmed the importance of parental smoking behavior as a predictor of adolescent smoking (Baugh, Hunter, Webber, & Brenson, 1982; Borland & Rudolph, 1975; Chassin, Presson, & Sherman, 1984; Chassin, Presson, Sherman, Montello, & McGrew, 1986; Friedman, Lichenstein, & Biglan, 1985; Kelson, Pullela, & Otterland, 1975; Krosnick & Judd, 1982; Levitt & Edwards, 1970; Spielberger, 1985; U. S. Public Health Service, 1976). British researchers have identified a comparably strong link between parental smoking and children's tobacco use (Banks, Bewley, Bland, Dean, & Pollard, 1978; Banks, Bewley, & Bland, 1981; Bewley, Bland, & Harris, 1974; Cartwright & Thomson, 1960). Brown, Cherry, and Forbes (1986) obtained data from 105,788 Canadian school children in grades 3 - 13, using a probability sample. The highest percentages of current smokers, for both sexes, were observed when both parents smoked.

According to Pflaum (1965) parental influences operate in a sex-linked fashion with boys following their father's example, and girls their mother's, however he provides no evidence for this conclusion. Ahlgren, Norem, Hochhauser, and Garvin (1982) reported a slight but nonsignificant same-sex link

in their study of fifth and sixth grade smokers. Baer and Katkin (1971), studying college students, found that sons were least likely to believe they smoked too much if only their fathers smoked, while daughters were least likely to do so if only their mothers smoked. Gottlieb (1982), studying undergraduate women in the Boston area, found that mothers' smoking was significantly related to their daughters', while the fathers' was not. In a small sample of college undergraduates, Wohlford (1970) reported a relationship between sons' and fathers' smoking patterns, but found no same-sex link between daughters and mothers. Salber and McMahon's (1961) study of high school students revealed no same-sex link for either boys or girls. Even though both Flay et al. (1983) and Hirschman et al. (1984) interpreted Kelson et al.'s (1975) study as having demonstrated that smoking by the same-sex parent exerts a strong influence on children's smoking, Kelson et al.'s data do not reveal any evidence of a differential effect of fathers' or mothers' smoking on their children, nor do the authors report one. Similarly, Spielberger (1986) reported no evidence of same-sex parental modeling. At the moment, the available evidence is equivocal with respect to the issue of sex-linked parental influences on the smoking of children.

Rather than looking at actual smoking behavior, some studies have investigated the correlates of adolescents' intentions to smoke. Chassin et al. (1981) found no consistent

intentions of a nonsmoker. Biglan, Weissman, and Severson (1985) reported that related intentions to smoke were a weak predictor of subsequent smoking for middleschoolers (1.8% of the variance), and of no predictive value for highschoolers.

Friedman et al. (1985) attach more importance to the immediate social situations surrounding smoking initiation (proximal factors) than they do to attitudinal or intentional precursors (distal factors). They proposed that "...attitudes and intentions that are favorable to smoking are unlikely to determine smoking in the absence of propitious social situations" (p. 10). There is little doubt that teenagers' attitudes and intentions are related to their actual smoking behavior, however it remains to be seen whether and to what degree these relationships are causal. Moreover, there is little evidence that intentions are themselves the direct result of parental influence.

A few studies have looked at the association between parental attitudes and teens' smoking (Allegrante, O'Rourke, & Tuncalp, 1977; Chassin et al., 1984; Kahn & Edwards, 1970; Palmer, 1970; Vellar, 1979). In general these data are difficult to interpret because parents rarely encourage their children to smoke; parental attitudes tend to be negative, regardless of a child's smoking status. Chassin et al. (1984) found that nonsmokers who became 'triers' had parents who were relatively more accepting of smoking than did nonsmokers who remained nonsmokers. Biglan and Lichenstein (1984)

peer influences are the preeminent factor in the onset of experimentation. The influence is a direct one: adolescents smoke when they are with other adolescents who are smoking. In initial experimentation same sex peers are typically the ones who influence the adolescent to smoke. Adults are seldom present" (p. 218). The excitement, nervousness, and arousal which may accompany the first attempt to smoke, combined with the social dynamics involved (best friends, etc.) may generate a number of subjective experiences, all of which may be attributed to the effects of the cigarette. This misattribution may contribute to smoking's appeal (Eiser, 1985).

Biglan et al. (1985) also argued that peers are instrumental in maintaining smoking, once experimentation has been initiated. The influence is direct and concrete -- consisting of frequent and specific prompts to both experiment with cigarettes and to continue smoking. Friedman et al. (1985) conducted detailed interviews with 157 teenagers concerning the first three situations in which they smoked, or were pressured to smoke. The results showed that initial smoking is unmistakably a social event. Friends, acquaintances, and siblings constituted 88% of all those present when experimentation occurred, and those involved were more likely to be of the same sex. Chassin et al. (1984) found that peer influences were significant predictors of the transition from nonsmoker to trier, and from trier to regular smoker. These peer influences were

1923 it was newsworthy that women had begun smoking in public. The prominent coverage afforded the topic by the press probably helped popularize the habit -- partly because the cigarette was a symbol of cultural, social and political change. Advertising may have helped legitimize women's smoking, but it did not cause it. A similar argument can be made today. (Bogart, 1983; Dicken, 1978; Fisher, 1976).

and behaviors [among young girls] reflect broader social forces, including changes in sex roles ..." (Gritz & Brunswick, 1980, p.271). Yankelovich, Skelly, and White (1977) proposed that smoking is simply one of a number of behaviors which, in the past, have been suppressed by prescriptive social norms concerning sex-appropriate behavior. As norms change, the previously suppressed behaviors are "disinhibited". Several investigators have endorsed this line of reasoning. The converging rates of male and female smokers are partly due to the lag between adoption and cessation patterns between males and females (Ferrence, 1988).

Clausen (1968) alluded to a "quest for social power" factor which distinguished female smokers from their nonsmoking peers. Both Bogart (1983) and Reeder (1977) mentioned changes in the proportion of women in the work force, rising educational achievement, and concomitant changes in living habits and family structure as contributing factors to more similar patterns of smoking between women and men. Bosse and Rose (1976) described a decrease in the difference between male and female rates of smoking cessation, which they interpreted as a reflection of increasing sex-role egalitarianism. Previous research had demonstrated that fewer females, compared to males, were able to successfully stop smoking. Assuming that evidence of secular trends may appear more conspicuously among professionals than in the general

received the most attention and/or have yielded the most substantive information concerning smoking initiation -- namely locus of control, school achievement/motivation, rebelliousness, and self-image. A section on multiple drug use has also been included. Recent research suggests that prior alcohol use may be an important predictor of subsequent experimentation with cigarettes. Moreover, viewing smoking as just one component of an overall disposition to use drugs in order to alleviate stress represents a conceptual advance over previous approaches.

Locus of Control

Locus of control (I - E) refers to the extent to which one believes that life's outcomes are contingent on one's own actions or behaviors (Rotter, 1966). Individuals with an internal control orientation tend to perceive events as being determined by factors intrinsic to themselves. Those with an external orientation tend to view events as determined by fate, luck, chance, or manipulations beyond their control. The few studies available are fairly consistent in showing that smokers tend to be more externally controlled than nonsmokers (Smith, 1970).

James, Woodruff, and Werner (1965) found that both male and female smokers were more external than nonsmokers, and that males who successfully stopped smoking were more

internal than those who continued. Hjelle and Clouser (1970) selected college freshmen who were clearly either internally or externally oriented, and found that external females were more likely to be smokers than were internals. The difference for males was not significant. Foss (1973) expected that I-E orientation would be related to cessation rates, and his data showed that more internals than externals had either cut down or stopped smoking within the previous two years. Williams (1973) investigated the preventive health behaviors of 386 ninth graders in a Boston suburb. I-E was associated with smoking only for the girls. Interestingly, smoking was related to general health habits. Nonsmokers were more likely than smokers to use seat belts, obtain sufficient sleep, and get regular dental checkups.

Clarke, MacPherson, and Holmes (1982) studied 1,307 seventh grade Vermont school children, and found nonsmokers to be more internal. Also, nonsmokers who planned to continue to refrain from smoking were more internal than any other group. Penny and Robinson (1986) compared 138 regular adolescent smokers in South Wales with a control group of nonsmokers who were matched on several demographic characteristics. Smokers were significantly more external than the nonsmokers, and also had lower self-esteem and higher anxiety levels. Hirschman et al. (1984) attempted to identify factors predicting movement through the early stages of

his data showed that female smokers provided a significantly greater number of 'power' themes on a projective test compared to male smokers, the female smokers did not differ significantly from either male or female nonsmokers. His evidence does not warrant the inference of a power preoccupation.

Smoking is, and has been part of our culture, and it is linked with many social situations. Due partly to the women's movement, women are increasingly finding themselves in situations that either promote smoking, or at least make it more appropriate for them to smoke than it has been in the past. Thus it seems quite legitimate to view the increase in sex-role egalitarianism with respect to smoking as a reflection of changes in social values and attitudes. Occasionally, cigarette advertising directed towards women is identified as a possible explanation for the relatively high prevalence of female smoking (Ernster, 1985, 1986; Gritz, 1984). The dramatic rise of female smokers in the 1920's, is also sometimes offered as strong documentation of the power of advertising to alter consumer patterns. The evidence is strong, however, that advertising tends to follow rather than initiate consumption trends.

Schudson (1984) has chronicled the history of cigarette advertising around the turn of the century. He argues that women began smoking in large numbers before any advertising was directed towards them, and concludes that advertising followed a consumer trend -- it did not create it. In

Giamonna (1969) described the dangers of inferring a cause-and-effect relationship from a correlation. For example, a number of studies have demonstrated that extraversion and smoking are directly related (i.e., Eysenck, 1973). It is tempting to conclude that extraversion precedes smoking and has a causal impact on smoking onset. In the absence of longitudinal data demonstrating that extraversion does, in fact, exist prior to smoking, such a conclusion would be unwarranted. Because smoking may perform important social functions (Mausner, 1973) it is quite conceivable that smoking could contribute in a causal way to the acquisition of extraversion.

Another difficulty with comparing smokers and nonsmokers on some personality measure has to do with the interpretation of group differences. For example, a demonstration that smokers are, on average, more impulsive than nonsmokers, does not mean that all smokers are impulsive and all nonsmokers reflective. The distributions of test scores for the two groups overlap considerably, such that attempting to predict smoking behavior from impulsivity scores would be specious. A statistically significant difference may not necessarily reflect a difference of any psychological significance.

Because of these methodological limitations, the absolute amount of information concerning smoking onset and individual characteristics is relatively small. This section focuses exclusively on those psychological dimensions which have

reasons for the increase in smoking among girls over the past 20 years. One suggestion is that anti-smoking messages have less of an impact on females, compared to males, although the authors acknowledge that there is no empirical support for this claim. Moreover Gritz and Brunswick (1980), after reviewing the relevant literature, concluded that there are no sex differences with respect to compliance in responding to doctors' advice to change smoking habits. Also, Bragg and Hughes (1984) reported that the percentage of smoking nurses is 10% higher than that for women in general. Haughey et al. (1986) surveyed 1,163 student nurses and found that their smoking rates were similar to that of the general female population. Knowledge of health consequences was unrelated to smoking behavior. More importantly, 75% of the student nurses either started to smoke, or increased their smoking during nursing school. In light of these sorts of data, lack of information per se seems an unlikely explanation for women's increasing smoking rates.

Another possibility is that smoking by teenage girls has become more socially acceptable, and therefore girls are now providing more accurate reports of their smoking. According to this argument, young girls are not necessarily smoking more than they used to, they are simply admitting it more often. Again, there is no evidence for this position, but the notion that smoking is perceived to be more acceptable is consistent with the proposition that "...shifts in smoking attitudes

Smith (1969) found that high school and junior high smokers had higher extraversion scores than nonsmokers. Presumably, extraverts are more vulnerable than intraverts to social influences such as peer pressures, if only because the peer group would be larger for extraverts (Chassin, 1984). Similarly, control orientation correlates to some degree with social desirability (Ashkanasy, 1985), which refers to the degree to which one's actions are calculated to gain approval and rewards from others. Thus, both extraversion and an external locus of control may increase susceptibility to adult and peer modeling influences -- both of which have been shown to be important antecedents of smoking onset.

Academic Achievement

While academic achievement is not typically thought of as a personality trait, the consistent negative association between school performance and smoking warrants treating scholastic achievement as a potentially important factor in smoking onset. The link has been documented as long ago as 1923 (Ravenel, 1923) and as recently as 1984 (Brunswick & Messeri, 1984a). The association is a pervasive one, and has been reflected in measures of grade point average (Veldman & Bown, 1969), educational aspirations (Chassin et al., 1984; Clausen, 1968) truancy (Banks et al., 1978), and study and

INDIVIDUAL CHARACTERISTICS

While there have been several hundred studies investigating possible associations between personality factors and smoking behavior, few have any relevance to the causes of smoking onset. After reviewing the pertinent literature, Williams (1971) was skeptical that research into personality correlates would contribute to an understanding of why children do or do not smoke. Hunt and Matarazzo (1970) were similarly dubious about the chances of learning much from such studies. Both McArthur et al. (1958) and Clausen (1968) concluded that personality seemed more related to the amount smoked, rather than to smoker/nonsmoker differences. Similarly, the authors of more recent reviews do no attach great significance to the role of personality variables in explaining smoking onset (Evans et al., 1979; Flay et al., 1983).

The major difficulty with studies which demonstrate a correlation between some psychological characteristic and smoking is that there is no way of knowing whether the particular trait was present prior to smoking onset, let alone whether it had any predictive validity. As Clausen has stated "...the adult personality correlates of smoking [may] fail to reflect adequately the personality forces that were operative when individuals started to smoke" (p. 375). Wohlford &

population, Dicken (1978) studied the smoking and cessation rates of public health professionals, psychologists, and physicians/nurses. He found fairly clear evidence of sex-role convergence in the smoking of these professional groups, but not in their cessation rates. In fact, professional women were more likely to smoke than their male colleagues, but less likely to quit. Generally similar findings and explanations were described by Erben (1979) in her review of studies conducted in Germany.

Gottlieb (1982) suggested that smoking may signal sisterhood and unity amongst 'liberated' women, and thus may serve to define a specific social role for the woman smoker. Chassin et al. (1981), in their study of smoking intentions, found few sex differences amongst the predictor variables, with the exception that females placed a higher value on independence. Fisher (1976) has elaborated at length on the notion of smoking amongst females as an attempt to display their "...emancipation and liberation from their tradition-bound stereotype of weakness and subordination" (p. 158). While it is undoubtedly true that women's changing social status is related to their smoking habits, and indeed to substance use in general (Mellinger, Balter, Manheimer, Cisin, & Perry, 1978), it is possible to go overboard with a psychodynamic interpretation. Fisher, for example, claims to have demonstrated that women who smoke "...seem preoccupied with the issue of power" (p. 561). While

smoking. In their sample, 77% of those who had tried a second cigarette progressed to a third. One of the factors characterizing this group was "helplessness", which was defined as a negative response to the question "If you're not doing well in school, do you keep trying to do better?" Strictly speaking, such a measure is not identical to that yielded by the conventional locus of control instrument, however it would appear to be tapping the same sort of internal disposition. In a sample of 10,579 UK school children, Eiser, Eiser, Gammage, and Morgan (1989) found that smokers showed more belief in the importance of "chance" as an influence in health outcomes. Stacey, Sussman, Dent, Burton, and Flay (1992) reported that adolescent nonsmokers were more generally 'self-efficacious' in resisting social influences.

In one of the few longitudinal studies to have addressed I-E orientation, Chassin et al. (1984) found that externality was a strong predictor of transition from nonsmoker to trier, but not for the transition from trier to regular smoker. Cherry and Kiernan's (1976) large scale longitudinal study found that both extraversion and neuroticism were significant predictors of subsequent smoking for both sexes. Seltzer and Oechsli (1985) reported that in their sample of 1445 children tested at age ten, those who subsequently became smokers had significantly higher extraversion scores than those who did not, although the absolute difference between means was not large.